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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/786,787

02/24/2004

Huikai Xie

5853-345

3761

30448

7590

09/21/2005

AKERMAN SENTERFITT

P.O. BOX 3188

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EXAMINER

HANLEY, JOHN C

ART UNIT

PAPER NUMBER

2856

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/786,787

Applicant(s)

XIE ET AL.

Examiner

John C. Hanley

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3 and 5-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3 and 5-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/30/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Fig 6-38 of PHD thesis.

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DETAILED ACTION

Information Disclosure Statement

1. In the IDS filed on 6/30/05, the references crossed out were already cited by the Examiner on the PTO-892 in the prior office action.

Specification

2. The amendment filed 6/30/05 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: Figure 5c, and the matter added to paragraph [0054] of the specification.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. Claim 11 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The original detailed description and/or drawings fail to depict or show how to fit x-y sensing structure inside the rigid frame while providing room and operability for the z-axis accelerometer.

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Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3 and 5-20 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the Hukai Xie Ph.D. thesis of May 2002 (Reference W).

8. As stated in the prior office action:

Figure 6-38 on page 194 of the thesis, taken in conjunction with the text of the thesis, clearly shows a three-axis accelerometer chip having a plurality of comb finger sets with one set for each of three orthogonal axes, where all are on a membrane layer portion of a single crystal substrate, and a proof mass support by at least one flexure, with comb fingers on the proof mass, where the flexure connects the proof mass to the membrane. A pre-amplifier is shown on-chip in Figure 6-24 on page 126. The comb finger sets provide fully differential capacitive bridges for all axes, and are formed of metal/dielectric stacks disposed on the membrane layer, where the metal may be electrically connected or isolated from the membrane layer, with the membrane layer having a smaller cross-section than the metal area of the fingers (Figure 3-20, page 51; and Figure 6-37, page 194). The structure for Z-axis sensing is spring decoupled from a rigid frame used for supporting comb fingers for x- and y-axis sensing. The membrane layer is further taught as being less than 100um thick on page 18.

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9. If not anticipated by the text and Figure 6-38 of Reference W, it would have been clearly obvious to one of ordinary skill in the art to take the technology presented with respect to the gyroscope structure and apply it to the fabrication of a 3-axis accelerometer as shown in Figure 6-38 and page 194 of the thesis text.

10. Applicant's remarks have been read and considered, but are unpersuasive. Applicant's argument that no details can be discerned by the very poor copy of Figure 6-38 is not well received, since a similar copy made by the Examiner, and attached to this action, clearly shows the same structure as shown by applicant's Figure 7A that applicant relies upon to describe the invention, and the poorly printed copy supplied by the Examiner is no where as clear as the same figure from which it was copied. In this figure, it is clearly obvious to one of ordinary skill in the art, that there is a proof mass in the middle supported by flexures, for example, in the corners, and a plurality of sets of comb fingers for sensing motions. One of ordinary skill in the art, having read this thesis, would clearly recognize these as capacitive comb fingers. Applicant's argument that the thesis is primarily directed to gyroscopes and not accelerometers is similarly unpersuasive, since the paper does mention and show a 3-axis accelerometer. Further, gyroscopes and accelerometers are not so different as to render one skilled in the art of gyroscopes, as shown in the thesis, incapable of applying the same structural built technology presented in the thesis to EACH axis of a three-axis accelerometer. Applicant further admits in his original paragraph [0054] that those having ordinary skill in the art will appreciate that the structure for x-y sensing can be disposed inside the frame. Thus, applicant recognizes the ability of one of ordinary skill in the art to arrange the elements with respect to one another to sense the appropriate

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motions. Further regarding claim 8, the thesis clearly shows comb finger sets where each side is electrically isolated from the other. This technology is clearly applicable to the comb fingers commonly found in accelerometers. Further, the limitations of claims 18 and 19 may be found in Figure 6-37, and page 194 of the thesis.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C. Hanley whose telephone number is 571-272-2195. The examiner can normally be reached on M-F 9AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCH



HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Fig 6-38 & applicant's PHD Thesis

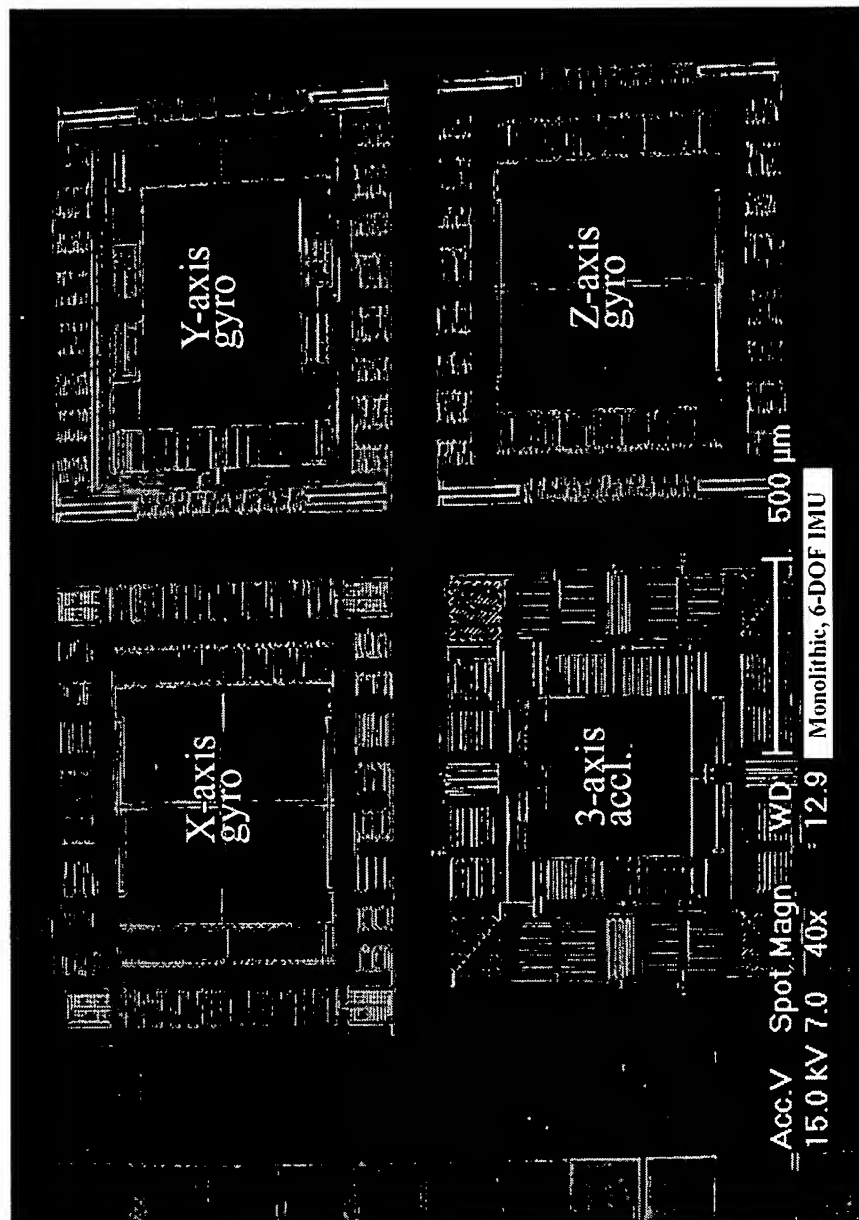


Figure 6-38: SEM of a released 6-DOF IMU.